



Location: User-specified point center at 36.539050, -77.617575

Ring (buffer): 1-mile radius

Description:

Summary of ACS Estimates		2010 - 2014
Population		157
Population Density (per sq. mile)		37
Minority Population		113
% Minority		72%
Households		62
Housing Units		87
Housing Units Built Before 1950		6
Per Capita Income		18,590
Land Area (sq. miles) (Source: SF1)		4.27
% Land Area		100%
Water Area (sq. miles) (Source: SF1)		0.00
% Water Area		0%

	2010 - 2014 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	157	100%	358
Population Reporting One Race	153	97%	600
White	51	33%	209
Black	101	64%	322
American Indian	0	0%	12
Asian	0	0%	33
Pacific Islander	0	0%	12
Some Other Race	0	0%	12
Population Reporting Two or More Races	5	3%	62
Total Hispanic Population	8	5%	72
Total Non-Hispanic Population	150		
White Alone	45	28%	209
Black Alone	100	64%	322
American Indian Alone	0	0%	12
Non-Hispanic Asian Alone	0	0%	33
Pacific Islander Alone	0	0%	12
Other Race Alone	0	0%	12
Two or More Races Alone	5	3%	62
Population by Sex			
Male	83	53%	339
Female	74	47%	179
Population by Age			
Age 0-4	5	3%	146
Age 0-17	29	19%	186
Age 18+	128	81%	233
Age 65+	24	15%	100

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.

Source: U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.



Location: User-specified point center at 36.539050, -77.617575

Ring (buffer): 1-mile radius

Description:

	2010 - 2014 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	112	100%	215
Less than 9th Grade	9	8%	69
9th - 12th Grade, No Diploma	31	28%	127
High School Graduate	45	40%	163
Some College, No Degree	17	15%	100
Associate Degree	6	6%	39
Bachelor's Degree or more	9	8%	66
Population Age 5+ Years by Ability to Speak English			
Total	152	100%	304
Speak only English	144	95%	318
Non-English at Home ¹⁺²⁺³⁺⁴	7	5%	64
¹ Speak English "very well"	3	2%	64
² Speak English "well"	0	0%	14
³ Speak English "not well"	1	0%	20
⁴ Speak English "not at all"	3	2%	45
³⁺⁴ Speak English "less than well"	4	3%	46
²⁺³⁺⁴ Speak English "less than very well"	4	3%	47
Linguistically Isolated Households*			
Total	0	0%	12
Speak Spanish	0	0%	12
Speak Other Indo-European Languages	0	0%	12
Speak Asian-Pacific Island Languages	0	0%	12
Speak Other Languages	0	0%	12
Households by Household Income			
Household Income Base	62	100%	173
< \$15,000	15	23%	84
\$15,000 - \$25,000	13	21%	87
\$25,000 - \$50,000	15	24%	95
\$50,000 - \$75,000	7	12%	93
\$75,000 +	12	20%	94
Occupied Housing Units by Tenure			
Total	62	100%	173
Owner Occupied	53	84%	160
Renter Occupied	10	16%	66
Employed Population Age 16+ Years			
Total	138	100%	287
In Labor Force	79	57%	238
Civilian Unemployed in Labor Force	13	9%	95
Not In Labor Force	60	43%	159

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.

*Households in which no one 14 and over speaks English "very well" or speaks English only.



Location: User-specified point center at 36.539050, -77.617575

Ring (buffer): 1-mile radius

Description:

	2010 - 2014 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	152	100%	304
English	N/A	N/A	N/A
Spanish	N/A	N/A	N/A
French	N/A	N/A	N/A
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	N/A	N/A	N/A
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	N/A	N/A	N/A
Chinese	N/A	N/A	N/A
Japanese	N/A	N/A	N/A
Korean	N/A	N/A	N/A
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	N/A	N/A	N/A
Other Asian	N/A	N/A	N/A
Tagalog	N/A	N/A	N/A
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	N/A	N/A	N/A
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	N/A	N/A	N/A
Total Non-English	N/A	N/A	N/A

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.

*Population by Language Spoken at Home is available at the census tract summary level and up.



Location: User-specified point center at 34.500577, -78.478742
 Ring (buffer): 1-mile radius
 Description:

Summary	Census 2010
Population	89
Population Density (per sq. mile)	14
Minority Population	52
% Minority	59%
Households	35
Housing Units	44
Land Area (sq. miles)	6.50
% Land Area	99%
Water Area (sq. miles)	0.07
% Water Area	1%

Population by Race	Number	Percent
Total	89	-----
Population Reporting One Race	87	98%
White	37	41%
Black	48	54%
American Indian	2	2%
Asian	0	0%
Pacific Islander	0	0%
Some Other Race	1	1%
Population Reporting Two or More Races	2	2%
Total Hispanic Population	1	1%
Total Non-Hispanic Population	88	99%
White Alone	37	41%
Black Alone	48	54%
American Indian Alone	2	2%
Non-Hispanic Asian Alone	0	0%
Pacific Islander Alone	0	0%
Other Race Alone	0	0%
Two or More Races Alone	2	2%

Population by Sex	Number	Percent
Male	44	49%
Female	45	51%

Population by Age	Number	Percent
Age 0-4	3	4%
Age 0-17	12	14%
Age 18+	77	86%
Age 65+	19	21%

Households by Tenure	Number	Percent
Total	35	
Owner Occupied	29	81%
Renter Occupied	7	19%

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.

Source: U.S. Census Bureau, Census 2010 Summary File 1.



LOYD RAY FARMS – BOONEVILLE, NC

WIN-WIN FOR LOYD RAY FARMS, DUKE ENERGY, AND GOOGLE

SYSTEM DESIGN

Lloyd Ray Farms is a feeder-to-finish swine farm located in the Piedmont region of North Carolina. The farm operation has nine barns housing 8,640 swine. In 2011, the construction of an innovative waste management system was completed, which included a lined and covered anaerobic digester basin. The system also boasts a lined in-ground aeration basin for treatment of other waste products and reduction of odors. The digester was constructed as part of a demonstration project to avoid the emission of methane from the farm's waste stream and to produce renewable electricity from swine waste in fulfillment of North Carolina's Renewable Energy and Energy Efficiency Portfolio Standard (REPS), which is the only REPS in the country to include a specific set-aside for swine waste-derived electricity.

The anaerobic holds about 2.1 million gallons of manure and wastewater. Two plastic curtains, or baffles, extend the length of the digester basin. The digester operates at ambient temperature and has an average hydraulic retention time of 15 days. Effluent from the digester flows by gravity to an in-ground lined aeration basin of approximately 1.1 million gallons.

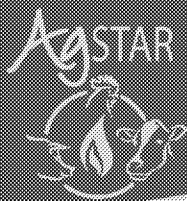
Each barn is emptied and flushed to the anaerobic digester once each week; the covered basin digester receives approximately 400,000 gallons of influent per week. The flushed waste enters the digester, where biogas production occurs. Upon leaving the digester, the liquid stream of the remaining waste product enters into an aeration basin, where pathogens, heavy metals and nutrients (e.g., nitrogen and phosphorus) are removed. A portion of the treated liquid wastewater stream is recycled back to the barns as flush water for filling the pits beneath the animals. The rest is sent to the original storage lagoon for eventual use as irrigation-quality water.

Biogas production for electricity from the covered basin is estimated to be 50,400 ft³/day. The biogas is piped to a 65 kW microturbine to generate electricity, with the gas pretreated in a conditioning skid that dehumidifies and cools the gas and filters particulates larger than 5 microns. Notably, the gas does not need to be scrubbed for hydrogen sulfide (H₂S) removal because the microturbine

can withstand a relatively high concentration of H₂S. The system also has a backup flare that is used to burn the biogas when gas production exceeds the microturbine's capacity. Gas production thus far has been so great that the flare is often in use at the same time as the microturbine to alleviate pressure on the digester cover; the project team has considered installing an additional microturbine.

The total turnkey cost of the innovative waste management system was \$1.2 million, including both the electricity-producing components (digester, gas conditioning equipment, and microturbine) and the environmental system (aeration basin and jet aeration system). External sources funded the entire system; the farm operator incurred no out-of-pocket expenses for construction, and is not responsible for operation and maintenance. Those external sources include:

- The North Carolina Division of Soil and Water Conservation's Lagoon Conversion Program: \$115,000 (agriculture cost-share program that contributed the funds as a grant to the farmer).
- The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP), through NRCS's Cooperative Conservation Partnership Initiative (CCPI): \$385,000 (agriculture cost-share funding to the farmer).
- Duke University and Duke Energy: \$700,000 (capital costs and are jointly responsible for O&M costs for a period of 10 years). Duke University provided funding as part of a three-party cost-sharing agreement with Lloyd Ray Farms and Duke Energy, with the university receiving any carbon offset credits generated by the project. For the university, the farm's system represents a demonstration and research project. Per the agreement, Duke Energy provided funds from its research and development pool and will receive all renewable energy certificates (RECS) achieved by the system over the life of the project.



- Google, Inc., in collaboration with Duke University, agreed to share O&M expenses in return for a portion of the carbon offsets.

The generated electricity is used on-farm to operate the system and to serve the electricity needs of five of the nine barns. Any excess electricity is sent to the utility via the electricity grid. While the farm receives no payment from the utility, the operator still estimates that the farm saves an average of \$200 per month in electricity costs.

PROJECT BENEFITS

The Loyd Ray Farms' anaerobic digester-based system produces benefits beyond electricity production and carbon offsets. It qualifies as an innovative animal waste management system, which yields significant water and air quality benefits. The farm now substantially eliminates ammonia (NH₃) emissions, heavy metals, pathogens, nutrients, and odors and completely eliminates the discharge of waste to surface and groundwater. The specific North Carolina environmental performance standards that the project meets include:

- Eliminate the discharge of animal waste to surface water and groundwater through direct discharge, seepage, or runoff.
- Substantially eliminate atmospheric emission of ammonia.
- Substantially eliminate the emission of odor that is detectable beyond the boundaries of the parcel or tract of land on which the swine farm is located.
- Substantially eliminate the release of disease transmitting vectors and airborne pathogens.
- Substantially eliminate nutrient and heavy metal contamination of soil and groundwater.

Per North Carolina state regulations, the construction of new waste lagoons is prohibited. Rather, new farms must construct innovative waste management systems to be permitted, while no existing farm may expand its operations (i.e., add more animals beyond its permitted capacity) unless it installs an innovative waste management system. Because the covered-basin anaerobic digester is part of an innovative waste management system, Loyd Ray Farms is in a position to expand its operation at a time when other farms may not, which means that it may be able to increase its productivity by as much as 20 percent.

In addition, the innovative system is expected to allow Loyd Ray Farms to convert its sprayfields, where only hay and grasses are currently grown to uptake the high nutrient content of untreated waste from the lagoon, into cropland where higher value cash crops such as corn and soybeans can be grown. The cleaned water effluent from the aeration basin is used to flush the barns and re-charge the pits, replacing the ammonia-laden wastewater previously used from the lagoon. Cleaner water for flush, spray water for cleaning the barns, and pit recharge leads to cleaner air in the barns and is expected to improve the health of the pigs and reduce mortality rates by decreasing their exposure to pathogens and ammonia emissions.

The digester-based innovative system reduces greenhouse gases and produces clean, renewable energy, which each earn marketable environmental credits. Carbon credits are earned via reduction of methane emissions, which will be registered and verified to the Climate Action Reserve (CAR) Livestock Methane Protocol. The carbon offsets for Loyd Ray Farms will be the first North American swine farm-based offsets to be registered with CAR. Notably, offsets that comply with the CAR Livestock Methane Protocol are recognized as one of four compliant offset types under California's cap-and-trade program. In addition to the offsets, the gas collected off of the digester is used to produce renewable energy that earns renewable energy certificates (RECs) through North Carolina's REPS. The system is expected to generate carbon offset credits of approximately 5,000 metric tonnes of carbon dioxide equivalents per year and produce enough electricity to earn approximately 500 RECs per year.

- **Population Feeding Digester: 8,640**
- **Baseline System: Storage Lagoon**
- **Digester Type: Lined and Covered Basin**
- **System Designer: Duke University**
- **Biogas Generation: 50,400 ft³/day**
- **Biogas Use: Electricity**
- **Receiving Utility: Surry-Yadkin Electric Membership Corporation**



Location: User-specified point center at 35.541568, -78.885872

Ring (buffer): 1-mile radius

Description:

Summary of ACS Estimates		2010 - 2014	
Population			858
Population Density (per sq. mile)			204
Minority Population			139
% Minority			16%
Households			293
Housing Units			350
Housing Units Built Before 1950			31
Per Capita Income			25,464
Land Area (sq. miles) (Source: SF1)			4.20
% Land Area			100%
Water Area (sq. miles) (Source: SF1)			0.00
% Water Area			0%
		2010 - 2014 ACS Estimates	Percent MOE (±)
Population by Race			
Total		858	100% 428
Population Reporting One Race		829	97% 745
White		741	86% 404
Black		26	3% 107
American Indian		0	0% 12
Asian		3	0% 18
Pacific Islander		0	0% 12
Some Other Race		59	7% 192
Population Reporting Two or More Races		29	3% 123
Total Hispanic Population		111	13% 240
Total Non-Hispanic Population		747	
White Alone		719	84% 388
Black Alone		26	3% 107
American Indian Alone		0	0% 12
Non-Hispanic Asian Alone		3	0% 18
Pacific Islander Alone		0	0% 12
Other Race Alone		0	0% 12
Two or More Races Alone		0	0% 12
Population by Sex			
Male		409	48% 256
Female		449	52% 255
Population by Age			
Age 0-4		62	7% 113
Age 0-17		198	23% 175
Age 18+		660	77% 277
Age 65+		93	11% 99

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.

Source: U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.



Location: User-specified point center at 35.541568, -78.885872

Ring (buffer): 1-mile radius

Description:

	2010 - 2014 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	575	100%	274
Less than 9th Grade	37	6%	77
9th - 12th Grade, No Diploma	48	8%	73
High School Graduate	194	34%	148
Some College, No Degree	188	33%	146
Associate Degree	49	8%	72
Bachelor's Degree or more	107	19%	136
Population Age 5+ Years by Ability to Speak English			
Total	796	100%	399
Speak only English	681	86%	341
Non-English at Home ¹⁺²⁺³⁺⁴	115	14%	199
¹ Speak English "very well"	73	9%	131
² Speak English "well"	5	1%	26
³ Speak English "not well"	7	1%	35
⁴ Speak English "not at all"	30	4%	103
³⁺⁴ Speak English "less than well"	37	5%	108
²⁺³⁺⁴ Speak English "less than very well"	42	5%	110
Linguistically Isolated Households*			
Total	12	100%	55
Speak Spanish	12	95%	53
Speak Other Indo-European Languages	1	5%	7
Speak Asian-Pacific Island Languages	0	0%	12
Speak Other Languages	0	0%	12
Households by Household Income			
Household Income Base	293	100%	145
< \$15,000	57	20%	98
\$15,000 - \$25,000	13	4%	36
\$25,000 - \$50,000	41	14%	68
\$50,000 - \$75,000	57	19%	86
\$75,000 +	125	43%	127
Occupied Housing Units by Tenure			
Total	293	100%	145
Owner Occupied	258	88%	134
Renter Occupied	36	12%	71
Employed Population Age 16+ Years			
Total	673	100%	336
In Labor Force	424	63%	256
Civilian Unemployed in Labor Force	36	5%	76
Not In Labor Force	249	37%	218

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. Source: U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.

*Households in which no one 14 and over speaks English "very well" or speaks English only.



Location: User-specified point center at 35.541568, -78.885872

Ring (buffer): 1-mile radius

Description:

	2010 - 2014 ACS Estimates	Percent	MOE (±)
Population by Language Spoken at Home*			
Total (persons age 5 and above)	796	100%	399
English	N/A	N/A	N/A
Spanish	N/A	N/A	N/A
French	N/A	N/A	N/A
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	N/A	N/A	N/A
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	N/A	N/A	N/A
Chinese	N/A	N/A	N/A
Japanese	N/A	N/A	N/A
Korean	N/A	N/A	N/A
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	N/A	N/A	N/A
Other Asian	N/A	N/A	N/A
Tagalog	N/A	N/A	N/A
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	N/A	N/A	N/A
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	N/A	N/A	N/A
Total Non-English	N/A	N/A	N/A

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2010 - 2014.

*Population by Language Spoken at Home is available at the census tract summary level and up.

EPA

Moderator: Jonathan Stein

05-12-16/11:05 a .m. ET

Confirmation # 160552132

Page 1

EPA

Moderator: Jonathan Stein

May 12, 2016

11:05 a .m. ET

Operator: This is Conference #160552132

Conference record has joined the conference.

Ericka Farrell: Hello?

Jill Johnston: Hello. This is Jill Johnston.

Mary O'Lone: Hi Dr. Johnston. Is Marianne on the line yet?

Marianne Engelman Lado: OK, you know what? We were mute. My apologies. So this is Marianne Engelman Lado from Earthjustice and I'm here with three colleagues and I'll let them introduce themselves.

Alexis Andiman: This is Alexis Andiman, also Earthjustice.

Brent Ducharme: Brent Ducharme from the UNC Center for Civil Rights.

Elizabeth Haddix: And Elizabeth Haddix, also from the Center for Civil Rights.

Marianne Engelman Lado: Hi there. Who's there at EPA?

Ericka Farrell: OK. We got Ericka Farrell from OCR, Title VI Office.

Jeryl Covington: Jeryl Covington from OCR Title, VI Office.

Mary O'Lone: This is Mary O'Lone. I'm from the Office of General Counsel.

Johanna Johnson: Hi. This is Johanna Johnson also from the Officer of General Counsel.

Marianne Engelman Lado: Hi there. Thank you.

Ericka Farrell: OK. Good afternoon. Again, this is Ericka Farrell from the Office of Civil Rights, Environmental Protection Agency in Washington, D.C. and thank you for taking the time to talk with us. And please be aware that this interview of Dr. Jill Johnston is being recorded. And, are there any objections to recording this interview?

Jill Johnston: No.

Marianne Engelman Lado: Dr. Johnston, do you have any objections?

Jill Johnston: No I guess.

Ericka Farrell: OK. Thank you. And, as you know, your August 2014 study was submitted to OCR to rely upon in this investigation and so whether North Carolina Department of Environmental Quality Regulations of swine feeding operations discriminate against African-Americans, Latinos, and Native Americans on the basis of race and national origin in neighboring counties and violation of Title VI and EPA's implementing regulations. And today we plan to ask some – ask you some fundamental question. I'm sorry, foundational questions, regarding the study in order for the OCR to determine whether we can rely on this study for our investigation. And in doing so, we are trying to understand what issues and arguments may be raised in opposition to your study. And we may need to ask you further questions at a later date.

And as we get started, we're going to start right now, Dr. Johnston with just some basic background questions. And can you please state for the record your name.

Marianne Engelman Lado: I'm sorry. Ericka – Ericka, if I can just interrupt you for a second. I just want to make sure, there were two studies that Dr. Wing and Dr. Johnston did conducted and then we submitted. One was the 2014 which you mentioned and the other was the revised version that's dated that it was exhibit 12 to a submission earlier this year. And it was dated October 19th, 2015 and it's based on that current set of hog facilities that are under the general permit. I just want to make sure both are in front of you.

Mary O'Lone: Well Marianne, the other one is not. The second only update. That's going to be one of our question. I'm sorry. This is Mary O'Lone. That was going to be one of our questions. Jeryl is now looking to see if we have it in our record.

Jeryl Covington: Right. As if Exhibit 12, that's the declaration b: **Citizen Name / Ex. 6**

Mary O'Lone: No. She sent on something –

Marianne Engelman Lado: So Jeryl, is not Exhibit 12 to the complaint. It's attachment 12 to a subsequent submission that we made in 2016 that contains Steve Wing's declaration and it contains the revision of the study.

Mary O'Lone: What's the date of that because they're shaking – this is Mary again, their shaking their heads like OCR doesn't have it.

Marianne Engelman Lado: April 12th, you did received it. I'm certain of that. April 12, 2016. And it had – and this is attachment 12. And it's important, you know, we'll get into the methodologies and all that. But you know, we wanted to make sure that there was a study of the actual data under the new permit. And this revised study is based on that, the data under the new permit.

Mary O'Lone: OK.

Marianne Engelman Lado: And we should go ahead even if you can't find it, you can ask questions based on the first study and we can resume at another time. That will still be helpful I'm sure. But it's important that you have that second study.

Mary O'Lone: Are you, Marianne – this is Mary again, are you at your desk? I mean can your e-mail it to Jeryl?

Marianne Engelman Lado: Yes.

Mary O'Lone: E-mail it to all of us so that at least we know we have it. They'll go back and look for it. But I just want to make sure that we do get it today. But I also agree with you. Because I think unless the methodology changed from the report submitted with the complaint to today, the questions would be the same. It's just a matter of the conclusions or results, right? That's what would have changed potentially.

Marianne Engelman Lado: That's right. I mean, I'll let Dr. Johnston speak and she'll answer specific questions about that. But the basic methodology is the same – there was – there may have been some tweaks that when you focused on it, she can answer questions about. So Alexis is forwarding it and – who's – so who's going to – if they look for an e-mail who would it be from?

Alexis Andiman: Is there just one e-mail I can send it to you and I'll just forward it to you right now.

Marianne Engelman Lado: Who should we send that for?

Mary O'Lone: Covington.jeryl.

Marianne Engelman Lado: OK. Got that.

Mary O'Lone: @epa.gov.

Jeryl Covington: We do not – yes, we do not received that. I don't have a copy of that.

Mary O'Lone: Okay. So back to the beginning.

Ericka Farrell: Yes. For the record, Dr. Johnston, can you please provide your full name?

Jill Johnston: Jill Elizabeth Johnston.

Ericka Farrell: And please provide your professional contact information, specifically your office address and office telephone number and office e-mail.

Jill Johnston: Yes. It's 2001 North Soto Street, Los Angeles, California 90089. My office phone number is 323-442-1099 and my e-mail is jillj@usc.edu.

Ericka Farrell: Thank you. And as we begin, can you also state what your current professional position is?

Jill Johnston: An Assistant Professor of Preventive Medicine in the Division of Environmental Health at the University of Southern California.

Ericka Farrell: OK. And as we begin, also, can you give us what your professional background is in relation to the studies that we're going to be talking about today.

Jill Johnston: Yes. I have a PhD in Environmental Science and Engineering with the minor in public policy from the University of North Carolina at Chapel Hill and also completed a Post-Doctoral Fellowship in Environmental Epidemiology also at UNC.

Ericka Farrell: OK. And now, I'm going to turn this over to Mary O'Lone.

Mary O'Lone: So this is Mary O'Lone. Dr. Johnston, Marianne's probably explained to you one of the reasons that we wanted to speak with you. And after we go through the questions that we have, you can see why it was very good ~~idea for us to speak to you first. Because what we~~ wanted to do when Marianne explained **Personal Privacy / Ex. 6** if we had a chance to speak with him in the future, we wanted to try to limit the questions that you know, we would be asking him. So, we really appreciate you taking yourself available to answer these questions with us. Because I think, there are a lot of them and a lot it comes from the fact that we don't have a particular background on this. So, we're going to ask you probably some very basic questions from your perspective.

Jill Johnston: OK.

Mary O'Lone: But the first one is your role in the – we're going to talk first about the 2014 study. And your role in that study.

Jill Johnston: Yes, so I collected the data and conducted the analysis in consultation with Dr. Wing and created that the table and the figures in this report and help with drafting the text. But Dr. Wing took the lead on writing the text for this.

Mary O'Lone: OK. Was this study peer reviewed or did it go through any kind of even informal internal sort of peer review?

Jill Johnston: There was discussion with other faculty within our department at University of North Carolina but it was not submitted or considered under scientific peer review process for a journal.

Mary O'Lone: OK. And we might as well ask the update that was done. Is it similar?

Jill Johnston: Yes, (inaudible) it was probably not submitted or have been under a scientific peer review.

Mary O'Lone: OK. Do you – and Marianne I don't know if this is – this is may be a question for you. I don't know if it's for you or Dr. Johnston, but was the – was the 2014 study submitted to North Carolina DEQ?

Jill Johnston: No.

Mary O'Lone: OK. Or do you know if they're aware of it?

Jill Johnston: Not to my knowledge.

Mary O'Lone: OK. All right. Now we're going to get into sort of a knots and bolts of the questions that we had about the study itself. So, Dr. Johnston, do you know – can you explain why three miles was chosen as the distance?

Jill Johnston: Yes, so we based that on a few (inaudible) peer reviewed scientific studies. One is by Mirabelli from 2006 that specifically looked at asthma prevalent in middle school students in North Carolina and found that middle schools within a three mile radius of an industrial hog operation had higher prevalence of asthma, and other asthma related symptoms, compared to students who went to school further away. Also some dispersion modeling of hydrogen sulfide conducted of at a large hog CAFO in Iowa show that hydrogen sulfide can travel up to 6 kilometers which is a little over three miles from the facility itself and impact air quality in that radius. And there was also sort of two other studies that looked at, the relationship between hydrogen sulfide protections and hog CAFOs one from North Carolina and one from Iowa. The one from North Carolina being by Guidry in 2016 and then by Pavilonis in 2013 that used 5 kilometers as their distance.

Mary O'Lone: OK. Thanks. Did you by any chance look at other distances or analyze other distances that weren't discussed in the 2014 report?

Jill Johnston: So we did not. We considered different criteria for inclusion of census blocks, you know, whether any part was within three miles or whether they're centroid. But we didn't have a capacity to compare our three mile results to two miles or one mile or some other criteria.

Mary O'Lone: OK. How was –the basic question, how was the block centroid determined? Was it geographic, location or?

Jill Johnston: Yes. So (inaudible) our GIS software with you know, the census block data from the U.S. and to 2010. And then, yes, the program assigned the centroid.

Mary O'Lone: So it assigned that based on the geographic center of the block not something to do with the population.

Jill Johnston: It had nothing to do with population, yes. It had to do with what the spatial definition of where the centroid would be based on the shape of the block.

Mary O'Lone: OK. For the study area, 19 counties were excluded that didn't have an IHO and didn't border one. Why was it important to exclude those 19?

Jill Johnston: We thought it appropriate to consider population that were potentially at risk for being near an industrial hog operation. And so, just the geography and mountainous nature of Western North Carolina, you know, as well as highly urbanized areas. Or just not locations where CAFOs would be sited. So we didn't consider those population at risk and that did not include them in the study area for this analysis.

Jeryl Covington: Yes. This is Jeryl Covington. I do have one question on that one. You all were also excluding the counties that were adjacent to and had no – please give – can you explain the basis for that exclusion as well to the 19 counties in the Western North Carolina area.

Jill Johnston: So we excluded counties where they had to meet two criteria. One is they had no CAFOs in their borders and no adjacent county for them had any CAFO. And it's largely because these areas are highly mountainous and don't have the facilities or the land mass that you need for the liquid waste distribution system for a CAFO to be permitted there.

Mary O'Lone: Ok?

Jeryl Covington: OK.

Mary O'Lone: This is Mary again. What is the – can you explain the adjustment for rurality and is that the same thing as adjusting for population density. And then why was that appropriate?

Jill Johnston: Yes. So – yes. The – so the content of rurality we measured it by population density for each census block. And we find this – and so we present both the unadjusted and the adjusted values in the report. But find that this is important because the land availability and also typically the price of land is highly influence by the population density in the amount of land that is available. And also different patterns of which racial or ethnic group within which areas can be – can influence population density as well. So that's why we – we chose that content of both the marker of kind of the economics and the land availability to adjust for in the model.

Jeryl Covington: This is Jeryl again, could you – could you clarify the land availability. I wasn't quite clear on that explanation.

Jill Johnston: OK. Yes, so, I mean. As I mentioned before, not only do you need the barns to house the animals but then also you know, fields around it where the waste is sprayed. So an area with the high population density, you're not going to have – it's not necessarily going to be appropriate to have the space availability to put a CAFO in those areas or to put as many. And – it's basically, the land available for agriculture can basically correlated with the population density of that area.

Mary O'Lone: But that was – OK. This is Mary again. Because I – you can't see me but my brain is cranking very slowly. But, so this is not because you were excluding these areas because you've already excluded the 19 counties that have nothing. Now you're doing an adjustment to say, to basically say that OK, in the – to find that the... the more sparsely populated – maybe we'll get into when we get back into the table in explaining those. But I'm trying to understand the fundamental points of why you did it. And it is to say that these things tend to go in really rural areas. And you know, as we look at areas they get more and more rural, we also see, you know, where they are, the amounts of hogs there are and a change in the demographics. That's why you're doing the rurality piece to it?

Jill Johnston: Yes. And it's sort of a concept of, I guess they're familiar with confounding and other epidemiological models. So we felt that population density is a very important factor that influences the siting of hog CAFOs. And so, that's why we presented sort of adjusted models to acknowledge the fact that population density as sort of a proxy for both the cost of land and the sort of amount of land that would be available for either agricultural activity was important to consider when we're looking at the association between race and permitting of hog CAFOs.

Marianne Engelman Lado: This is Marianne. Can I jump in for a sec. On page 4 of the 2014 reports, Dr. Johnston, you have –there's a sentence there that says, by adjusting for populations density or rurality, we compare racial vulnerability that IHOs for racial groups within each level of rurality –

Jill Johnston: Right.

Marianne Engelman Lado: I think that's what you're getting at. Can you explain that a little bit more that is – so it's not taking away the salience of race but testing for it by looking within each level of rura..., I can't even say the word, rurality. Is there still salience of race towards this outcome? Is that right?

Jill Johnston: That is correct and we try to provide an example here that perhaps is a little bit more intuitive. But for example, like when you're looking at mortality rates and you want to compare across two different populations. It's important to account for age because of risk of mortality changes with different age groups. And so if the age structure of the two populations

aren't equal, you want to address for those factors or account for those factors so that you can look within each age group. So essentially, we're trying to account for the same thing here that acknowledges that perhaps your risk for a CAFO being permitted nearby you is different depending on the population density of the area where you live. And so by including that adjustment, we can account for those differences across different areas in North Carolina.

Mary O'Lone: OK. Is everybody good on that right now? OK. OK. Can you explain the study state live weight calculation? So we're on page 4 again of the 2014 study. And how did you determine whether the study state live weight of an IHO should be included and I – this is – it's not about the calculation of the city state live weight but more – how you captured a particular IHO. And I sort to have two visual images in my mind. And one has – you take the centroid of a block and you draw a circle three miles out, right?

Jill Johnston: OK.

Mary O'Lone: This is what I'm thinking happened. And the latitude and longitude of any IHO that fell within that three mile circle is what you counted. Is that right?

Jill Johnston: That is correct. And it was some, but yes. We started the centroid of each block. And did exactly what you describe.

Mary O'Lone: Because, well we were trying to figure out whether there was anything – whether it was like if you had, instead you were pulling, if there were a block that straddled the three mile circle, you know, you would pull an IHO that might be sitting in that block. Do you know what I mean? But that's not what you did. You just – it was if the latitude and longitude of that CAFO fit in the circle. Then it was added to the total weight.

Jill Johnston: Yes. So in essence, each CAFO was not counted one time. It could be counted multiple times depending on how many blocks it was within three miles from.

Marianne Engelman Lado: In other words, this is Marianne Engelman Lado again, Dr. Johnston, if there was a CAFO that straddled that three mile radius or was in one radius and then another radius, how would you handle it?

Jill Johnston: Yes. So our unit of analysis is the census block. And so for each census block sort of independent of all the other ones, we would draw the three mile radius and count up every CAFO that fell within the three miles. And then we would go to the next, you know, the adjacent block to it. Draw a circle and count up every CAFO within three miles of that block. And so, so the sum of the steady state live weight, could be counted, you know, if not, we didn't assign each CAFO only to one block. We assigned each block to the nearby CAFOs. Does that help explain it?

Marianne Engelman Lado: I think so.

Mary O'Lone: Well, so then the next, I guess my next question is when you look at the people. So the latitude and longitude has to be within third, three mile circle. And then when you count the people, how are you doing that?

Jill Johnston: So the people aren't counted more than once. We, we include the population of each census block. So, all the – there's a hundred people living in the census block, they're all assigned the same study state live weight based on what the three mile radius.

Mary O'Lone: OK. OK.

Jill Johnston: So people are not counted more than once in the model.

Mary O'Lone: OK. I get it. Anybody else have any question about study state live weight? All right. OK, the next question was about you know, asking you about the update. Did the update happen but we know that it did. So, we will skip that one and come back to it at a later date probably.

Jill Johnston: OK.

Mary O'Lone: So on page 4, you describe how race and ethnicity was categorized. But then when we looked at the complaint, we went – and we looked at page – where is that? 106. 106. OK, on page – I don't know what – 35 of the complaint. It also talks about the characterization in particular of African-Americans. And the description seemed, seemed inconsistent to us. And it had to do with people who could identify themselves as black and Hispanic. And so, we were wondering if, if these two – if the statement about it on page 4 of the 2014 report and footnote 106 on page 35 of the complaint, whether they were inconsistent or weren't inconsistent or you know, like how we should be interpreting this.

Jill Johnston: I mean, so I can describe the definition we used in the report and then maybe Marianne can talk about the footnote. But we used for of one the census categories. And so, our definition of black was anyone who identified it – identified themselves as African-Americans are black with or without any other race or ethnicity. So if they identified as black and Hispanic, it would be categorized in this black group. So that's how we did it for the purposes of this –

Mary O'Lone: Ok.

Marianne Engelman Lado: I'm sorry Dr. Johnston in – on page four it says black is people who identify themselves as African American or Black with or without any other race. Is that right? I thought just heard only without – with.

Jill Johnston: Yes.

Marianne Engelman Lado: I'm sorry without.

Jill Johnston: No, I'm sorry if I said that I misstated. No, I meant – yes, how it's written here is correct. So it's –

Marianne Engelman Lado: And then footnote 106 says the term African American herein corresponds black as used in the report it – the black racial category referred to those who identified as African American – that's probably a typo. It should be with or without.

Mary O'Lone: OK, all right.

Johanna Johnson: Hi this is Johanna Johnson. I just one quick follow up question. And that's with regards to individuals who identify themselves as Black Hispanic. You indicated they will be categorized in the black category. But would they also appear in the Hispanic category as well?

Jill Johnston: Yes, So I would note one of the (inaudible) these terms but the definitions of Black, Hispanic and America Indian. We do not use mutually exclusive terms or mutually exclusive categories. So people when we do the race specific analyses they could be counted with more than one race based on what they identified on their census forms.

Mary O'Lone: OK, any other –

Jill Johnston: But the category of non-Hispanic white and people of color. Those two are mutually exclusive. So there's no one that overlap, you know, which is what we use for our primary analysis.

Mary O'Lone: Right. Anything else?

Johanna Johnson: No.

Mary O'Lone: OK. Now what we'd like to do and Marianne maybe you can help in the updates that was sent. You know is it just the numbers that have changed? Well let me explain what I'm going to do here. What we wanted to do was walk through in a study. Each of the tables – each of the figures and tables to make sure we understand what they say and then

we wanted to look at them – look at how they're characterized in the complaint because one of the things that we have to do as we discussed it internally is be able to communicate in layman's terms how these – what these findings are. So we want to make sure that we understand it and we can see that, you know, the complaint takes, you know, writes up something. And so we wanted to see – we wanted to make sure that, you know, what was in the study or I mean what was within the complaint could, you know, use that as our layman's discussions. So we wanted to cross walk these things but also go through them and make sure that we actually understand, you know, what the study itself is saying. OK?

Marianne Engelman Lado: Yes, let me give some context and I don't know if this will be helpful or not but let's try. First of all Elizabeth reminded me and we will double check. When we filled the complaint we probably sent a copy to then DENR now DEQ.

Unknown Female Speaker: I think that's right.

Marianne Engelman Lado: There were some confidential documents in there. So we didn't send the whole thing. And we'll have to go back and check our records and let you know what we sent and what we didn't. I don't see any reason – I mean this was not a confidential document. But I just don't remember. So and I'm not sitting in front of the, you know, my computer where I can pull up exactly what was sent to DEQ. So, so we'll do that and we'll get back to you on that. In terms of the difference let me tell you our thinking and methodology as complainants. And then Dr. Johnston can say a little bit about what might have been different, if you remember Dr. Johnston. So we obviously wanted to get, even though the 180 day requirement is waivable we wanted to get a complete set of allegations into OCR within 180 days. So we wanted to do it–submit a disproportionality analysis that was rigorous within that 180 day timeline. The challenge is at the 180 day timeline, the data – I think it wasn't even up on the Website for DEQ then DENR. But if it was, not with sufficient notice to be able to ask Dr. Wing and Dr. Johnston to do an analysis. So talking to – knowing that there wasn't going to be that much difference in the location of these facilities for technical reasons which you may be aware of that any new facility in the State of North Carolina have to use new technologies. And it's only pre-existing facilities that haven't expanded that are under the state the general permit. So while some facilities may drop out of the list there are not going to be any new facilities on the list. And there's kind of disincentive to drop out. So we knew there wouldn't be that much change. So we did ask Dr. Wing and Dr. Johnston if it made sense to do the disparities analysis first on the list that existed at the time right before we filed the complaint which is what they did with the – and then and they could refine their methodology by doing that building on the work that they had previously done on disproportionality.

And then once – once we had the list and I should say and Dr. Johnston you can talk more about this, there was a lot of work that went into that. There was a lot of clean up of the data. The – the geographic locations often weren't right. There was just a lot of work that went into working with that list. And then they were able to provide the 2014 disproportionality analysis. But with the full intent that once we had the – the list of facilities that had been approved for operation under the challenge firm and are under the new permit they would then conduct the same analysis.

But I say the same kind of in quotes because if there were any – any lessons learned or any tweaks that the new data provided that they would – they were free to kind of have the best analysis possible. So, you know, again Dr. Johnston can refresh my memory to precisely what tweaks there may have been. But I don't want to state that the only difference is in the results because there was an opportunity to have a fresh look at the methodology – fundamentally the

methodology was similar. But they were able to tweak the way they were doing things in order to do the best study possible.

Jill Johnston: Yes, so the major difference is there were 2,055 CAFOs included in the 2014 analysis. And then for the updated analysis based on the permit list there were 2,029. So, you know, that was the major change for facilities that do not undergo permitting or ones that where their permit expired and we do have any evidence that they were going to like renew their permit. What we tried to do in the 2014 analysis was use the best available knowledge we had about which – which CAFOs to include. So we did get some additional information from the state about which ones were not operational and which ones may have had permits but had zero animals housed there. So we did make some adjustment in this first paper to try to anticipate what would be included under the general permits. But in terms of the methodology the analysis and the tables provided are the same. We changed the figures a little bit to try to make them look nicer and we also – there were 20 western counties excluded and that was using the same criteria as we did before. But there was just one additional county that met these criteria.

Mary O'Lone: OK. Yes, OK. Well that was a good explanation. So can we now turn to the – we're going to work from the 2014 (inaudible) you know what we have in front of us. And maybe when you made the changes some of our questions will be answered. But I just – I wanted to start on page 11 just with figure 1. And I have no questions about that. Now I'm moving on to figure 2.

Jill Johnston: OK.

Mary O'Lone: OK. It says the percent of population living within three miles of an IHO in relation to the percent of people of color. Is that the percent of the population in the green study area or the –

Jill Johnston: Yes, so all of the data and all the table and figures provided here are from the study area.

Mary O'Lone: So figure 3. So in the complaint figure 3 is described on page 35 in paragraph 133. I should (inaudible). And I guess the – what we're asking you Dr. Johnston is well I guess do you agree with, that this statements states what your study shows and what that figure shows I guess?

Jill Johnston: Can you read the statement please?

Mary O'Lone: You don't have it? I'm sorry.

Jill Johnston: No, I don't have it, sorry.

Mary O'Lone: It says as shown in the following figure which depicts the relationship of industrial swine facilities to the racial and ethnic composition of North Carolina, swine facilities are clustered in communities of color.

Jill Johnston: Yes, I would agree with that statement.

Mary O'Lone: OK – flipping.

Jill Johnston: And now just to note this becomes figure 2 actually in the updated report. And here we kind of just have three categories of people of color. Anyway it's displayed more closely than how we conduct the analysis in the updated report.

Mary O'Lone: What do you mean? I'm not sure I understand what you mean.

Jill Johnston: (inaudible) – so we actually had like six – six categories that we assign census blocks into six racial categories. And on this map but as original figure in order to simplify it we just show three categories under 20 percent, 20 to 40 percent and then above 40 percent.

Mary O'Lone: We – that was actually a little hard to hear. Can you say that again?

Jill Johnston: I'm sorry. So on this figure, the figure 3 we show – we just showed three categories just that we simplify for purposes of displaying the information which was less than 20 percent, 20 to 40 percent and greater than 40 percent whereas in the updated figure we show all six categories that we use for our analysis. So it's just a minor point and it doesn't impact my interpretation of it.

Mary O'Lone: OK.

Jill Johnston: But just to note if we were discussing these changes between the two versions.

That was one. We just changed how we displayed the information.

Unknown Female Voice: OK. In the updated version it's figure 2 on page 11.

Jill Johnston: Yes.

Mary O'Lone: OK. So now we're moving on to table 2. So table 2 is – table 2 is discussed in a handful of paragraphs in the complaint. So I guess I will just read them to you one at a time. So this is paragraph 132 on page – I don't know what – wait, 13, so it's 13. No. It's not. What am I talking about? 35, paragraph 132 on page 35 of the complaint. And we are talking about table 2 on page 13 of the study. Paragraph 132 says analysis of the population statewide yields consistent result. The proportions of African Americans, Latino's and Native Americans statewide living within three miles of an industrial swine facility are 1.4, 1.26 and 2.3 times higher than the percentage of non-Hispanic Whites respectively which-Table 2- the disparities are also statistically significant. Is that right?

Unknown Female Voice: Yes.

Mary O'Lone: Table 2.

Unknown Female Voice: I would note that refers to both page 6 and table 2 of the report.

Mary O'Lone: What?

Unknown Female Voice: Paragraph 32, 132.

Unknown Female Voice: OK.

Mary O'Lone: That is basically your sort of quoting page 6. Is that what you're saying?

Unknown Female Voice: I believe so.

Jill Johnston: So that statement I think maybe actually doesn't draw on table 2 that we have shown here which is just for the study area. I think – I believe those numbers that you've read are for the whole state for a statewide analysis where we don't exclude any areas.

Mary O'Lone: OK. So which table should this or is this about? Where are those results displayed?

Unknown Female Voice: It's the first paragraph on page 6, OK.

Jill Johnston: I am not sure of all the tables from our statewide analysis were included in the documents sent to you.

Mary O'Lone: You mean – OK. So the document dated August 29th, 2014, Industrial Hog Operations in North Carolina, what you're saying is there's results discussed in the text that aren't displayed in the table or a figure.

Jill Johnston: Yes, so all the tables and the figures provided in this document are just for the analysis where we restricted it to the study area as (inaudible) –

Mary O'Lone: OK.

Jill Johnston: But there was a parallel analysis that didn't restrict that like included all census blocks in the State of North Carolina and so these results included in the text on page 6 are from that analysis that uses the entire population.

Unknown Female Voice: OK. OK. Just to draw your attention to paragraphs 131 and 132 of the complaint. 131 says analysis based on the study area that excludes the state five major cities in

western counties. And then goes on to give the numbers. And then paragraph 132 by contrast says analysis of the population statewide yields consistent result.

So paragraph 131 is about the data in the study area and paragraph 132 says it's consistent but here are the numbers for the state – for a statewide run. Is that correct Jill?

Jill Johnston: Yes.

Jeryl Covington: So 131 again is just for the state –

Jill Johnston: OK.

Jeryl Covington: Or Statewide?

Unknown Female Voice: Paragraph 131 says analysis on a study area so it's for the state but only the study area within the state. And that's what the tables reflect. Paragraph 132, the very first sentence says analysis of the population statewide yields consistent results. So that's – those numbers 1.4, 1.26 and 2.39, which are the same numbers that appear at the top of the report on page 6 first paragraph, is the statewide numbers not just the study area.

Mary O'Lone: So the reference to table 2 is not because those numbers come from table 2. But because table 2 – wait. What is it? It's not about...

Unknown Female Voice: I think the reference to table 2 should probably be like see also. It's – you know I think table, I'm sorry, Page 6 is the actual support whereas table 2 – as Dr. Johnston said seems to be only the study area. Is it all state in the original?

Unknown Female Voice: Well it's racial and ethnic composition of (inaudible) census blocks within three miles of an IHO and more than three miles. So it's the study area excluding the western counties.

Unknown Female Voice: (inaudible) western counties.

Unknown Female Voice: Let me (inaudible) –

Mary O'Lone: OK, so I'm sorry. So this paragraph is basically saying that the statewide results are consistent with table – the proportions are consistent with table 2 which is about the study area?

Unknown Female Voice: Right.

Mary O'Lone: Dr. Johnston is that right?

Jill Johnston: Yes, I'm just, Ok, I'm looking, so yes, I opened up the – I found the document. So yes, so 131 is the proportion, matches within table 2 and then 132 is referring to the state wide analysis with no exclusion areas in which that we did not show the table in this report.

Mary O'Lone: OK, great. We're going to go to – I think so paragraph 140 in the complaint I think it's sort of repeat of that. The statewide proportion of African Americans living within three miles of an industrial swine facility – statewide is 1.4 times higher than the proportion of non-Hispanic whites in that site, table 2 and page – table 2 and page 6.

Jill Johnston: Yes, I believe that's the – that's the same pattern where the one above matches that, the table. In this report, that is the study area, and then 140 versus the statewide analysis.

Mary O'Lone: OK, 142. OK, so the next paragraph then is 142. Are we having the same issue here – the same thing going on? African Americans make up a larger portion – proportion of the population living in proximity to industrial swine (inaudible) than the proportion of the population living within three miles away from any facility with disparity.

Jill Johnston: I believe that (inaudible) compares right that the 20 percent of African American compared to 13 percent of non-Hispanic whites that live within three miles of a CAFO.

Unknown Female Voice: I'm sorry were you quoting again from paragraph 132?

Unknown Female Voice: What are you talking about 142?

Unknown Female Voice: 142, OK, thank you.

Jill Johnston: (inaudible). And it doesn't provide the numbers. But I believe the reference seems appropriate.

Mary O'Lone: OK. And the statement is accurate? 142, OK. Now were moving to 148.

Jill Johnston: Yes, that's the same. That's in reference to the statewide analysis.

Mary O'Lone: OK and that's accurate?

Jill Johnston: Yes.

Mary O'Lone: And 150. (inaudible)

Jill Johnston: Yes, I believe that is correct.

Marianne Engelman Lado: OK. So I'm just trying to reach back and – and Dr. Johnston you may remember as well, these reference to table 2, there are different ways of looking at them. And one maybe that we met kind of the report six provides the information, it's more like a see also table 2 with consistent results. But – but the other way of thinking and I remember that there were lots of charts and tables with the numbers. And I think, and again Dr. Johnston you may remember better than I, we may have taken some charts and tables out simply to make it all more presentable because it was kind of too long and too much. And if we did, could this table 2 have referred to statewide analysis? I just don't remember if there was an earlier draft with more tables, but I seem to have some vague recollection and if so that it may just be kind of typo. But again it's also perfectly consistent, you know, that we may have just thought it's also supported by table 2.

Jill Johnston: You are correct that some variation of all these tables included everything from the study area analysis and then a repeat, you know, maybe like, you know, 2A and 2B or something. I don't remember exactly how we laid it out but some type of study area to the whole state analysis. So it could have drawn on that. And maybe the different iterations change. We try to not have quite as many tables.

Mary O'Lone: Well I'm – this is Mary. I'm beginning to think maybe it would be a good idea to send all the tables in because I know that, you know, there were some questions here about numbers and stuff.

Marianne Engelman Lado: So we could certainly look for any tables that we had that included the statewide analysis which is the piece here and because, you know, if we have something. Also, you know, as these tables were being developed Dr. Wing and Dr. Johnson may have gone back to the data and tweaked, you know, and found that there was a mistake that we included NPDES permits or we included something else that had to be cleaned up. So I don't want to send over stuff that isn't correct, isn't final, right? But because – because they worked on this and as I said before there was a lot of work going into refining the data and then refining the methodology. So but what we can look to see if there were – I do have a recollection that we may have had some near final tables that might have included the statewide data. And we just thought it was too much. So if we have that we can certainly send that over and we'll look for that. I'll put a star next to that as a to-do.

Mary O'Lone: All right, thanks and when – just asking. So the tables don't have headers on them. They're descriptive like the ones that are here. So table 1 is –

Marianne Engelman Lado: I'm not sure were looking for a totally free standing table or is Dr. Johnson said it may have been this table with an additional column. And we just thought it was too confusing to have all that information in one column. It's that kind of thing. So – so it would have a header, you know, if it were a near final version. But I just don't – it's a couple of years ago. And by the time the revisions came long it was more like using this 2014 version as a base so some of these questions weren't revisited again. So its two years ago and I'd have to look

back and confer with Dr. Johnson. But I think there may be something that we can send over to you with statewide data.

Jill Johnston: Yes, we may have to format I'm not sure all the information ended up in this final format but there is a version of the data available.

Mary O'Lone: OK, all right. So turning back –

Marianne Engelman Lado: Just to be clear as I read this and Mary you can correct if you're looking for something that I'm not thinking about or Dr. Johnson correct me if I'm wrong about this. But the data is actually in on page 6. It's just that it's not presented in, you know, in table 2 and the references from table 2 and that's a little confusing. So if we can find that so it, I'm happy to do that. But it doesn't --Dr. Johnson does it change any of your conclusions or is there anything different or new about that data?

Jill Johnston: No, I think it's consistent with what we – with the table that we show. And that, you know, the number and the text and what seems to be in this complaint form are correct.

Mary O'Lone: OK. So, you know, we wanted to – I'm looking at the clock it's five after four. But we wanted to, you know, march through sort of these paragraphs to have you, you know, do what you've been doing so far which is that it's saying yes, that's an accurate characterization of this – this table. And then, you know, after that we have a handful of other questions. But I'm wondering if there's an easier way to do this than just doing it on the phone here so that we can move on to the other kinds of – the other questions that we have. Did you -- Dr. Johnson, did you write these paragraphs that are in the complaint or did you – and or did you – did you write them? That's the first question.

Jill Johnston: No, I did not write them.

Mary O'Lone: OK. Did you review them all before they, you know, came to EPA?

Jill Johnston: I reviewed a version of them. I can't say whether it was the final version or not.

Mary O'Lone: Yes, here's what I'm trying to do. Marianne and I think you probably see what I'm trying to do here. I just want to make sure that – that Dr. Johnson, she didn't write it, but she does agree with what it says. And that's all I'm trying to do to make sure that now when we use it, you know, when we – if we were going to, you know, use the languages in here – that we can adopt it just trying to cross that “T” here.

Marianne Engelman Lado: Let me propose this since Dr. Johnson – we didn't know that this was what you're going to do and Dr. Wing also reviewed these paragraphs. And well, you know, we may have six typos after he reviewed it. He definitely reviewed the final version. I – but perhaps since we didn't expect this line of questioning and Dr. Johnson has a copy of the complaint after the phone call either if you can identify which paragraphs you want her to review –

Mary O'Lone: Sure.

Marianne Engelman Lado: And she can look at them and we can follow up. And if there are any points of divergence of course Dr. Johnson should say so on those paragraphs. But why doesn't she have time to review them and she can get back to us.

Mary O'Lone: Yes, I think that's more efficient.

Marianne Engelman Lado: OK. OK, is that OK with you Dr. Johnson?

Jill Johnston: Yes, I can do that.

Marianne Engelman Lado: OK. Which paragraphs is it or do you want to e-mail us?

Mary O'Lone: We're going to e-mail it. Yes. And we'll have to e-mail you the list. OK, the next question is I think we're already gone. It's hasn't been – the study has – now we're moving off

the, you know, this sticky thing and moving into more general questions. So the study hasn't been published. And you're checking Marianne on whether it was provided to DEQ.

Marianne Engelman Lado: Yes.

Mary O'Lone: OK. And I don't think we need to ask the next two. Do you know has this been made public in other way?

Jill Johnston: I believe that it's on Earth Justice Website.

Mary O'Lone: On the Earth Justice Website?

Jill Johnston: Is that correct?

Mary O'Lone: OK, then maybe I will after next question. Are you aware of any of response or criticisms or critiques of the study, you know, that are out there?

Jill Johnston: I am not and Dr. Wing hasn't shared any with me if he has received something.

Mary O'Lone: Marianne have – have you?

Marianne Engelman Lado: I'm thinking. To be – to be as – as complete as I can but I'm racking my brain and I – I don't think I have received any critique or response for the disproportionality analysis.

Mary O'Lone: OK, all right. Well, you know, if you do come across anything, let us know.

OK, now – now I just wanted to talk about the 2000 study. And mainly it's the differences between the 2000 study and the 2014 study. And, you know, sort of why those changes occurred if you know the answer. So, one of the changes was –

Marianne Engelman Lado: I'm sorry before you go in to that, I like you to just hold up the –

Mary O'Lone: Yes.

Marianne Engelman Lado: -- our Website and it look the disproportionality analysis is available through our Website.

Marianne Engelman Lado: Not on our Website? Where?

Unknown Female Voice: North Carolina Policy Watch.

Marianne Engelman Lado: North Carolina Policy Watch.

Unknown Female Voice: OK. Complaint or the study?

Marianne Engelman Lado: The study.

Mary O'Lone: OK, good, OK.

Marianne Engelman Lado: But – OK, then if you heard that the 2014 analysis seems to be available on North Carolina Policy Watch. We – just also so, you know, this is a little bit of an aside from this interview but we have not generally made available the declarations to the press or to other people. We – we in general when we've gotten inquiries we will call the declarant that might have information responsive to an inquiry and ask whether it's OK if we share their declaration, even for people who did not ask to have their information anonymous. I mean it's anonymously and – and as, you know, there was – that – that there was that category as well. But we are, you know, -- we are respectful of people's courage and concerns about retaliation and so we've been very careful not to just throw everything up on the Website. And it doesn't run to the disparities analysis but we haven't just put all the exhibits up on our Website or in any other place. So, that's – that's part of the backdrop as to why I'm not clear to where we sent what.

Mary O'Lone: OK. Did North Carolina Policy Watch just pick this up off of your Website? So, I'm wondering, so you said you haven't received any critiques. I guess I'm wondering or criticisms or, you know, any – anything not off the wall. Could it have gone in to –

Marianne Engelman Lado: North Carolina –

Mary O'Lone: North Carolina Policy Watch.

Elizabeth Haddix: It's a – this is Elizabeth.

Mary O'Lone: Yes.

Elizabeth Haddix: North Carolina Policy Watch picked up the complaint from the Center's website and I'm not recalling any discussion that I had with them. But it would not surprise me at all because they're – they are investigative journalist that they would dig into studies referenced in the complaint and share this with the public. So, in that – since the 2014 study, I mean it was not confidential, it's not surprising that they posted it on their Website.

Unknown Female Voice: And Dr. Wing may have been talking to members of the public and providing copies since it wasn't confidential.

Mary O'Lone: OK.

Elizabeth Haddix: I'm pretty sure that they had also posted the 2000 report a long time – years ago.

Mary O'Lone: Right.

Elizabeth Haddix: So, it – it could be also that they've just been tracking Dr. Wing's work so.

Mary O'Lone: Do you have a relationship with them or they just pick your stuff up and – and they put it up there. Because what I'm wondering is whether they were on the receiving end of anything legitimate as far as the critiques.

Elizabeth Haddix: I do – we do have a relationship with them, a collegial relationship with them so we could find that out if you're interested or.

Mary O'Lone: Yes, we, you know, we're interested – we are interested in it. I mean we're going to look too but we don't know what, you know, if they curate their site or what happened. So, we would be interested if – if they happen to have anything.

Elizabeth Haddix: I'll find out.

Mary O'Lone: OK, sure, great. Thank you. OK, so – so circling back Dr. Johnston to the – to the 2000 study and some of the changes in the methodology from that study to the 2014 study. One of the things that was discussed in the 2000 study had to do with well water. And looking at those that were – you know, somehow including those and now I can't remember because I'm – I'm looking for it now. But that was taken in to account, but that wasn't discussed in the 2014 study.

Jill Johnston: So, my understanding in this report they looked at sort of three different vulnerable populations. One being racial and ethnic minorities, one, do you know looking at people living poverty, and a third looking at people who are relied on well water, but so – the – all the three variables were not included in one model but they were sort of three parallel analyses that looked at the correlation between those different characteristics of the population and proximity to CAFOs.

Mary O'Lone: OK. And the well water component wasn't done in 2014, do you know – is there a lead in –

Jill Johnston: Yes, I mean so specifically we kind of prioritize looking at racial and ethnic disparities in that analysis. And just – just a limited capacity focused specifically on that issue. But also – so the 1990 census included information about people's drinking water sources. But that to my knowledge that is the last census that included that data so if we wanted to look at data in, you know, in the 2020, I 'm sorry in the 2010 census, they did not include questions asking about drinking water.

Mary O'Lone: All right, great, thank you.

Marianne Engelman Lado: It's like this is Marianne if I could just interject, so because this is – this was not a general study for the general public but a study to test whether there was a racial

disparity related to the general permit, the – the request was to examine that question, whether there are disparities on the basis of race and ethnicity. So, you know, there's a difference between doing a study, you know, for the general inquiry of, you know, of vulnerable populations and – and their relationship to CAFOs and looking into the relationship on the basis of race and ethnicity and whether the civil rights law is violated. So, it was really a question as to whether or not there was a disparity that cognizable under the civil rights law that, you know, that Dr. Wing and – and Dr. Johnson generously took up. So, that you know, -- that's a big part of it here.

Mary O'Lone: OK. Yes, I – I understand what you're saying Marianne. OK, the – so the next question it has to do with the distance and we talked about a little bit earlier. And I think that 2000 study did one and two mile buffers and now this one goes to three so can you – can you – and the next one has to do – the next question I have has to do with the measurement. The idea of moving off the buffer zones around the, the block group area to using the centroid. So, I mean maybe it's all related but if you could explain that.

Jill Johnston: Yes, yes so a major difference between the – for the spatial approach that we took in these two different reports is in the 2000 reports they relied on block groups. And so here there was a little over 4,000 block groups included I believe in the study area. And so, with our report we have over 200,000 blocks in our study area. So, the size of the blocks and the size of the block groups are very different especially in rural areas because they sort of (inaudible) to have, you know, similar types of populations in terms of counts in the – in these different census like geographic areas. And so in rural areas the block groups tend to be very big and so – so they were looking at the – the principal analysis in this 2000 report wanted to see if there was any CAFO in the block groups. And then as sort of a sensitivity approach because, you know, you can have a CAFO right in the corner of a block group and so that could impact it's neighboring block groups as well or a proportion of that population. So, as a sensitivity approach they also looked at, sort of one mile around the block group and then two miles around the block group and included, you know, the category of whether or not it was near a CAFO or (inaudible) adjusted based on those parameters. So, in contrast when you look at blocks, I don't remember the exact number but, you know, there's a little over 2,000 CAFOs in the state so if we were just to assign exposure based on whether or not there was a CAFO in the block, you know, that went down to like fewer than a thousand blocks because they're just much smaller. And so for – for this analysis it – when – when you're using blocks as your unit of analysis then – then you need to consider, I mean, we believe it's important to consider, a buffer zone around it because we know how chemicals can travel off-site. And so, you know, using evidence, a lot of papers that have been published since 2000, we sort of relied on a – a three mile buffer for the 2014 report. But that is – I mean the – the spatial scale of the two are just, are just very different and so that's part of these (inaudible) what kind of buffers were considered.

Jeryl Covington: Let – let me ask a question– and this is Jeryl so I'm – I'm understanding that you all looked the block group and you are still considering I guess the travel, the air emissions of H₂S, you all didn't overlay on this one as well to come up with that distance.

Jill Johnston: On the 2000 report?

Jeryl Covington: Yes.

Jill Johnston: So, the choice of the one and two mile buffers I cannot specifically speak to.

Jeryl Covington: OK.

Jill Johnston: As our part – I believe the data presented here in the table don't specifically include the buffer zone but that was used as a sensitivity analysis. So, if we included these buffers or change their definition of exposure with the patterns that we see changed and – and from my understanding of this report, you know, the patterns were – were consistent but I believe the tables show, rely on the definition of that, of block group is exposed if there's a CAFO in that block group.

Jeryl Covington: I'm going to repeat that. So, you're saying the block group is exposed if there is a CAFO in that block group?

Jill Johnston: Yes, that was the primary definition of the analysis from – from my understanding in this 2000 report.

Mary O'Lone: And the one and two mile buffer around the block group, was not that populations were measured one and two miles outside of that block group? For some other reason.

Female: Yes, so it would take – so perhaps there would be no CAFO in a block group.

Mary O'Lone: OK.

Jill Johnston: But if you do a one mile buffer around it there would be a CAFO. So, under that condition you would include that block group as this population is exposed to a CAFO. And – it doesn't specify I assume because it's block group that's using like around the – one mile around the buffer rather one mile from the centroid.

Mary O'Lone: Yes.

Jill Johnston: Because – you know, because block groups are so much bigger so – so you wouldn't get much outside the borders with that definition.

Unknown Female Voice: Dr. Johnston –

Jill Johnston: Yes.

Unknown Female Voice: And so just to – just to make sure I have it and it's clear when you say you would include that CAFO that's in the buffer up to two miles away in exposure that would be in the sensitivity analysis but not in – I don't know what you call it but the core analysis.

Jill Johnston: Yes, that's how, you know, I don't want to say 100 percent because I did not make these tables. But as I read this paper and how I understand the data presented is they're not using the – the buffered definition. They're – they're just using the category of whether or there's any CAFO inside the block group.

Mary O'Lone: OK, OK, anybody else? All right so the next question and Marianne, I think this probably goes back to what you've already said but, why was poverty omitted this time?

Jill Johnston: Yes, I think it goes back to the same point is that we were, you know, looking at – at criteria that were considered under the – the civil rights act.

Mary O'Lone: OK.

Jill Johnston: And – and so, you know, poverty not being one of those classes considered we didn't include it in the analysis.

Mary O'Lone: OK. Are there any other differences that you by chance know about between the 2000 and the 2014?

Jill Johnston: I mean, you know, the – how we assigned which people were exposed were different. Also this analysis includes all commercial CAFOs in the state of North Carolina whereas the 2014 we restricted to those CAFOs that are covered under the general permit. So, it does not include ones under the individual permits or under NPDES.

Unknown Female Voice: Ok.

Unknown Female Voice: Didn't you Dr. Johnston, explain what you mean by how the – how people are assigned. Are you referring to the use of quintiles and can you explain what the significance of that is.

Jill Johnston: Yes, so actually now (inaudible) – you're considered to be exposed to a CAFO if you live in a block group with the CAFO, you know, whereas in our – in our 2014 report, you're considered to be exposed to a CAFO if you're – the centroid of your block is within three miles of a CAFO.

Unknown Female Voice: Right.

Jill Johnston: But, yes, here also the – we – we take a similar approach to using your categorical variables to account for non-linearity in the relationship between, you know, the racial composition and proximity or exposure to CAFOs. But in this 2000 analysis they divide the group so that in each of the prior groups there's an equal number of block groups in it. So, that's how they defined their power point. So, for example like the – what was quintile is (inaudible) to 2.3 percent, the highest quintile is more than 44 percent people of color. Whereas in the updated (inaudible) we used partly just – because we thought it was a little bit more intuitive and easier to understand, we categorized the percent people of color in to equal – like equal percentages. So, our reference group was the zero percent people of color because that was a high percentage of population where they live in blocks with no people of color and then divided it from, you know, more than zero to 20 – 20 to 40 in this group of 20 percent. Because it's – it's a low risk I think easier to communicate rather than having to talk about, you know, this quintile versus that quintile and also because then we're able to look at, you know, these census blocks that are majority people of color.

Unknown Female Voice: So, Dr. Johnston so that the – just a follow up on that. So, that if you used quintile it would have – would you – it would have been difficult to say anything meaningful about the effect of living in a – over 60 percent versus over 80 percent people of color community but using your methodology you could get more granular on that basis? Is that – is that right?

Jill Johnston: Right

Unknown Female Voice: I didn't hear the answer.

Jill Johnston: I'm sorry. Yes, that is correct.

Unknown Female Voice: Ok.

Mary O'Lone: OK. Anybody else have any other questions, comments? OK. So, the 2000 study and – and, you know, maybe you – you may not be able to answer this but are you aware of any criticisms of that study? So, I think that – wasn't that submitted in one of the general permit processes? So, I'm wondering if it got more play in the outside world then if, you know, what reaction there may have been to that that you're aware of or critiques?

Jill Johnston: I mean it was published in Environmental Health Perspectives which is a high quality journal in environmental health and went through a peer review process. But I can't speak to any of critiques of it.

Mary O'Lone: OK. All right, where are we now? I think we're close to wrapping up here. We have a general – one – one last – one question here is the – is the generic one that's – that's all experts get asked and you probably seen it on TV which is the – you know, were you compensated for doing the study.

Jill Johnston: No. No, I was not.

Mary O'Lone: OK. And the other question I have – I heard somebody laughing, were wondering if – if you had worked with Dr. Wing on any other studies related to swine and – and swine farms of North Carolina.

Jill Johnston: Yes, I worked with him and also Dr. Guidry around an analysis of hydrogen sulfide concentrations near middle schools in Eastern North Carolina which was recently published.

Mary O'Lone: OK, that was – I think that is in your CV or was referenced in your CV, is that right?

Jill Johnston: Yes, yes.

Marianne Engelman Lado: And – and I was just going to interject here that that work and – and Dr. Johnson's experience working on studies generally community based participations studies and other work in the community on which she might base opinions about the adverse impact of – of swine (inaudible) could be subject to another interview as we kind of went back and forth on – that wasn't kind of the premise of this interview but –

Mary O'Lone: Right.

Marianne Engelman Lado: But she's generously said that, you know, if – if she knows in advance that she'd be more than happy to talk to you about that body of work and the research associated with it.

Mary O'Lone: OK, that would be great. Did – did the hydrogen sulfide study get submitted with the materials you sent in April Marianne?

Marianne Engelman Lado: Yes, it is the study that is – it was confidential at the time but it has since been published. So, it – it's – it exhibit but it also says it's confidential.

Mary O'Lone: OK, so –

Marianne Engelman Lado: It was pre-publication at that point.

Mary O'Lone: We have a – the – I'm trying to find – do we can – can send us the publication copy just to make it easy?

Marianne Engelman Lado: Yes.

Mary O'Lone: For us the – the published version, that would be great. You have any other questions right now, do you have another one? I don't think so. Is there – is there anything else that – that you wanted to add Dr. Johnston?

Jill Johnston: You don't – no, I don't believe so, I think if you have a chance to review our updated report then I'm happy to answer any questions or if there are any clarifications related to that but it – it I was a pretty parallel structure to what you have, we just refined the- which CAFOs were in included in the analysis.

Mary O'Lone: OK , and so, yes, and I'm kind of thinking Marianne since I haven't had a chance to look at it that, you know, how we were going to send you the paragraph that we wanted to do. I have a feeling we're going to have to– we have to fix it because we have to switch it now to the – to the newer study. So, the a newer study – what you submitted Marianne, is it going to include – is it just a new study or do you have a cover letter that it's like the complaint that goes through and, you know, here's the – here's the layman, you know, description of what is in – the support.

Marianne Engelman Lado: So, it's a little bit of a hybrid in the sense that we have the complaint and we're – we're filing additional submissions in support of the allegations in the complaint.

We don't amend the complaint and say this goes to paragraph 132, we rather are just submitting additional documentation in support of those allegations. So, there is a – a short cover letter but it's not – it's not lengthy and, you know, doesn't go in to which paragraph that it supports.

Mary O'Lone: OK.

Marianne Engelman Lado: OK, the other thing I was thinking might be useful since we're ending up a little bit early which is good is just to say a little bit more about Dr. Johnston's experienced, you know, and background and expertise on methodological issues and, you know, -- and of courses taught-- or research done or you have her CV and I think Jeryl Covington asked some questions earlier on but if you have any questions about that -- or I would just open up to Dr. Johnston to say a few more words about whether you have taken any courses or have any special training or expertise on methodology in epidemiology and public health.

Jill Johnston: Sure. I mean I guess the starting point is, you know, that's -- this was not submitted to the peer review process but there's a recent publication that -- that I authored in the American Journal of Public Health. That -- that sort of uses are very similar approach to a racial disparities analysis. It's around a different topic looking at waste water disposal wells in -- in South Texas so not related to industrial animal operations. But, you know, went through the peer review process used block level data and -- and a very similar approach to that. So, there is some, you know, some of -- some of that sort of expertise and -- and credentials in the peer reviewed literature that -- that is similar methods to what we're doing here in this paper. You know, but also, yes I mean I do have fairly expensive course work and the -- these different types of -- of progression modeling, epidemiological study design and also just quantitative data analysis, processes like both in, you know, in biostatistics and epidemiology and then also in the econometrics. And -- and then, you know, I had a two year post-doctoral fellowship in environmental epidemiology and -- and co-taught a class with Dr. Wing specifically on community based epidemiological methods and environmental justice.

Mary O'Lone: OK, well thank you actually that was helpful particularly to the reference to the West Texas or the -- the --

Jill Johnston: Yes, so that article I mean I can send it to you but it's also included in my CV and, yes, may be helpful I -- I think (inaudible) critiques on -- on the -- from the oil industry but nothing that -- that was really methodological driven but -- but yes that can -- it's -- it's a reference in the peer reviewed literature that's -- that takes a very similar approach to -- to how to analyze data in a racial disparities analysis as this one does.

Mary O'Lone: OK, is it -- is it easy for you to send us that report too? Because that -- that --

Jill Johnston: Yes.

Mary O'Lone: -- I think that would be helpful and then --

Jill Johnston: Then maybe I could send it to Marianne and then -- and in her package she can share with you.

Marianne Engelman Lado: Yes.

Mary O'Lone: Great. And the -- the oil and gas industry comments or response or whatever you want to call it. How -- like what form did that take?

Jill Johnston: It came out to a reporter that shared it to me -- with me.

Mary O'Lone: Can -- would you be willing to share that as well?

Jill Johnston: Yes, let me -- let me review it but probably --

Mary O'Lone: OK. OK, did anybody else have any questions at this point? OK.

Marianne Engelman Lado: So, we -- we have some follow up, we have some things to give you, we'll wait for your list of paragraphs as well and exchange information and then it sounds like on -- on the -- the follow up report that was submitted this year as well as the more recent study, as well as other studies and work on the adverse impacts, we should schedule another

interview time. And we can try to do that relatively quickly I think if – if you'd like so let's try to get that all under way.

Mary O'Lone: Yes, I think we'll have to – to get back to you on that.

Jeryl Covington: Yes, yes Marianne what I – what I have identified so far is that you will be sending after you review the background, the statewide study so that we can correlate the tables and the statewide data that you have in the – in the report. We will follow up on whether that questions for the paragraphs are relevant. We need to review the data that you just sent to us on April 12, 2016 to see if those questions have been answered. So, we'll have to review that e-mail and I did receive those e-mail submission. So, let us look at that and then we'll probably coordinate amongst ourselves on the follow up interview with Dr. Johnston and yourself.

Marianne Engelman Lado: Sure (inaudible) if you could send me some dates. I – I think what we said on the statewide data is if there are final charts again, I think it's just a reference problem in the complaint to this table 2–

Jeryl Covington: Yes.

Marianne Engelman Lado: If there was another table 2 with the state wide data or another table with the state wide data or another column in an earlier draft that, you know, sufficiently well along, we'd be happy to send it to you.

Jeryl Covington: OK.

Marianne Engelman Lado: But we will – we'll look for that and get back to you on that.

Jeryl Covington: OK. And then – the follow up we did receive in the April 12 submission the Guidry report that is marked confidential and I think you're going to submit that after publication without the confidential reference to it.

Marianne Engelman Lado: Correct.

Jeryl Covington: And then Dr. Johnston is going to do the supplementary information on the oil and gas disparity analysis literature to you and then you'll subsequently submit that to us.

Unknown Female Voice: So, I think it would be the publication as well as she's going to review the feedback she got to see if it's appropriate to forward.

Unknown Female Voice: Right.

Jeryl Covington: Right. OK.

Marianne Engelman Lado: Terrific. OK, OK. Thank you.

Mary O'Lone: Yes, I think that's it for now.

Unknown Female Voice: OK.

Marianne Engelman Lado: OK.

Mary O'Lone: All right thank you very much and thank you Dr. Johnston.

Jill Johnston: All right thank you.

Mary O'Lone: OK, bye-bye.

Operator: The leader has disconnected, the conference will now end.

END

O'Lone, Mary

From: Farrell, Ericka
Sent: Thursday, March 17, 2016 8:04 AM
To: O'Lone, Mary
Subject: FW: EPA OCR Complaint 11R-14-R4 (ADR)

Good Morning Mary,

Read below is the letter Marianne sent via email. There was no formal letter attached.

-----Original Message-----

From: Golightly-Howell, Velveta
Sent: Monday, March 07, 2016 9:43 AM
To: Dorka, Lilian <Dorka.Lilian@epa.gov>; Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>; Temple, Kurt <Temple.Kurt@epa.gov>; Packard, Elise <Packard.Elise@epa.gov>; Rhodes, Julia <Rhodes.Julia@epa.gov>; Farrell, Ericka <Farrell.Ericka@epa.gov>; O'Lone, Mary <o'lonemary@epa.gov>
Cc: Covington, Jeryl <Covington.Jeryl@epa.gov>; Whickum, Cheryl <Whickum.Cheryl@epa.gov>
Subject: FW: EPA OCR Complaint 11R-14-R4 (ADR)

FYI. A case discussion is needed to determine next steps. As Case Manager, would you please contact Ms. Whickum to coordinate it?

Velveta

Velveta Golightly-Howell
Director, Office of Civil Rights
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Mail Code 1201A
Washington, DC 20460
202-564-7272

-----Original Message-----

From: Marianne Engelman Lado [mailto:mengelmanlado@earthjustice.org]
Sent: Monday, March 07, 2016 9:37 AM
To: Covington, Jeryl <Covington.Jeryl@epa.gov>
Cc: Golightly-Howell, Velveta <Golightly-Howell.Velveta@epa.gov>; Elizabeth McLaughlin Haddix <emclaugh@email.unc.edu>; Hall, William <Hall.William@epa.gov>
Subject: EPA OCR Complaint 11R-14-R4 (ADR)

Re: EPA OCR Complaint 11R-14-R4

Dear Ms. Covington,

This email is intended to provide notice that complainants REACH, North Carolina Environmental Justice Network (NCEJN) and Waterkeeper Alliance, Inc., have come to the conclusion that Alternative Dispute Resolution in the above-mentioned case is not productive and is only serving to delay resolution of the complaint. We have also conveyed this information to the North Carolina Department of Environmental Quality, Will Hall, and the mediator, Michael Lewis.

We request that OCR initiate its investigation of the allegations that were accepted on February 20, 2015.

Please contact me at your earliest convenience to set up an interview with Dr. Steve Wing. As we have discussed, Dr. Wing is in chemotherapy and we hope to schedule a time in the near future that is as convenient as possible for him.

Finally, we wanted to mention that our initial mediation session was interrupted by an effort by the National and North Carolina Pork Councils to interject themselves into the mediation process. Despite the terms of ADR, which included a requirement that mediation be confidential, and despite our clear opposition to their self-styled "motion to intervene" in the complaint and mediation process, five representatives from the Pork Council appeared without notice to Complainants at the first mediation session. Their presence and insistence at playing a role in mediation delayed the start of our session and acted as a form of intimidation of our clients. Representatives from DEQ failed to object to the behavior. Indeed, quite the opposite, they tried to persuade Complainants to consent to bringing the Pork Councils into mediation. We thought it was relevant and important to bring these events to your attention.

Sincerely,

Marianne

Marianne Engelman Lado
Senior Staff Attorney
Earthjustice
48 Wall Street, 19th Floor
New York, NY 10005

Telephone Interview with: **Personal Privacy / Ex. 6**

November 23, 2016; 9:30 AM – 10:37AM:

Participants: Mary O'Lone (OGC), Daniel Isales (Region III)

On November 15, 2017, Mary O'Lone briefly interviewed **Personal Privacy / Ex. 6** North Carolina. At that time **Personal Privacy / Ex. 6** indicated that she would be amenable to continuing the interview via telephone; accordingly, arrangements were made to speak to **Personal Privacy / Ex. 6** on this date.

Personal Privacy / Ex. 6 indicated that she was not a part of, nor had been in communication with, the North Carolina Environmental Justice Network, the Rural Empowerment Association for Community Help (REACH), the Waterkeeper Alliance, Inc., Earthjustice or the University of North Carolina School of Law Center for Civil Rights. She indicated that she identified as a Native American, specifically as part of the Lumbee Tribe. **Personal Privacy / Ex. 6** said that she was born and raised in the area of **Personal Privacy / Ex. 6** and that she had family; **Personal Privacy / Ex. 6**. She grew up at **Personal Privacy / Ex. 6** NC (where her parents still live) and currently lives at **Personal Privacy / Ex. 6** NC.

Personal Privacy / Ex. 6

Personal Privacy / Ex. 6 remembered when the industrial hog and chicken operations arrived which was around the time she was in middle school (7-8th grade). Once the industrial animal operations started arriving their number grew quickly. She did not recall any notice being provided to the neighbors regarding the influx of industrial animal operations, but she did indicate that her parents were not ones to discuss those sort of matters in front of their children. She recalls that at that time the debate concerning the industrial hog operations centered on impacts on the residents versus the potential for new jobs. The area had once been rural with some manufacturing (e.g., Converse), but the manufacturing plants have been closing down.

Once the farms arrived, the summertime became unbearable outside. As a child she would play outside, and used to be in the yard constantly but once the farms she no longer wanted to. The family used to hang clothes outside in the line previously, but could no longer do so because the smell would permeate the clothing if left outside (the clothesline has since been torn down). At times when in vehicles, she would hit a wave of smell, which made activities such as riding the bus difficult as there would be no air; the odor would eventually pass, but they would put their shirts over their noses until the odor dissipated.

Spraying of the fields were done for the winter crops and for the summer crops. The smells in the winter were not quite as bad. Once the fields were sprayed the odor lingered for a week, week and a half. She said she could not observe any waste lagoons from her house or from the road. There was one hayfield which was in proximity to the house. With respect to spraying, she observed both trucks spraying and a centralized spraying system which would radiate out. She could not recall any runoff from the spray fields, but she said she was not looking for it.

Her parents' house has been and is on county water so there were no increased water costs associated with the influx of the industrial hog operations. Prior to the industrial hog operations, the house always had the windows raised to let the house air out; however, that is not done as often and they have increased their use of air conditioners.

Once the industrial hog operations arrived, there was an increase in flies and buzzards at the house. Family gatherings are now almost always held inside a building. They have smaller get-togethers because no one house is big enough to hold all the family and friends. For the most recent cookout they needed to use 3-4 fans to keep the flies and gnats away. She said the flies were outrageous and the gnats were in your face.

With respect to trucks, she has seen trucks with live pigs and trucks which had just dropped off pigs. She has not seen any trucks with dead pigs, nor any dead boxes. She indicated that one could not stay behind trucks carrying live hogs because of the odor (truck which had just dropped off pigs also retained a strong odor). Based on her observations from driving around the area, she would estimate that there were a couple of trucks a month passing through.

There were no streams or ponds close by which she could walk to for fishing.

Personal Privacy / Ex. 6

recalled what appeared to be difficulties by the owners of the house across from her parents' house that backs onto a spray field in terms of selling it. However, she indicated that there hasn't been any evidence of residents leaving en masse; even within her generation most people stay around (if they move, they move into town, the town over).

She did not recall any health impacts related to the industrial hog operations; there are many smokers in the family so respiratory ailments are related to that. She was not sure if her parents ever reached out to any regulatory authority regarding the impacts from the industrial hog or poultry operation.

Personal Privacy / Ex. 6

She has lived at this residence for the past 8 months. An industrial turkey operation is closest to the

Personal Privacy / Ex. 6 home (a little over a mile) and the owners of that operation also plant corn and other crops so there is constant spraying of waste using trucks. There is a big field close to her house, but she has never had any incidents of overspray. However, because of the how wide the trucks are riding back and forth, she believes they must be spraying beyond the borders. She did note, however, that her husband's grandmother's house is directly next to the fields and she was not sure if they have ever had any impacts from spraying.

When she arrived at the house in April they were preparing the fields and a couple of weeks ago there was spraying in preparation for the winter crops and there were strong, supersaturated odors associated with those activities. She does not believe there has been any spraying since Hurricane Matthew so the smells have not been bad the last couple of weeks. Spraying can happen any day, typically before 8; it can also happen on weekends, although typically not on Sunday. She cannot hang her clothes outside or leave windows open because of the smell.

When asked about trucks transporting live or dead hogs, she said there have not been many trucks passing by since her house is not on a major route.

The residence is served by county water. In terms of pests, flies, gnats and buzzards are bad. She was not sure of any changes in the nearby pond over time. Any gatherings at the residence are inside. Her husband gardens, but there are flies, gnats, and mosquitos outside.

A lot of people just view the impact from the industrial hog operations as a fact of life even though people talk about it all the time. There are several members of the Lumbee tribe who are also swine CAFO owners.

Interview with: **Personal Privacy / Ex. 6**
12/08/16; 11:00AM

Brent Ducharme, UNC Center for Civil Rights
Elizabeth Haddix, UNC Center for Civil Rights
Mary O'Lone, EPA OGC
Daniel Isales, EPA Region III

Personal Privacy / Ex. 6 In 2007, the NC state legislature passed legislation creating the Lagoon Conversion Program to provide grants to industrial swine operations that wanted to change from open air lagoons to some other waste storage system. The projects were to meet environmental criteria to reduce heavy metals. **Personal Privacy / Ex. 6**

Personal Privacy / Ex. 6 Other stakeholders on the Advisory Committee were from the pork industry, USDA, NC Soil & Water's Division of Water Resources, and NC State University. Mike Williams from NC State University, who had been tasked to lead the study of innovative technologies pursuant to the Smithfield Consent Decree also participated.

The Advisory Committee was to determine what the grant money could be used for and develop the application process including a scoring matrix was developed to evaluate the applications. While the group started out with hope, it became clear early on that there was not much enthusiasm from the pork council. **Personal Privacy / Ex. 6** and she is not sure if she attended all of the meetings.

She said there wasn't much communication with Advisory Committee members after the initial meetings. By 2008, there was not much push behind the Committee's efforts. She stated that it seemed as though they were crossing off checks to comply with the legislation. She just recently read the Lagoon Conversion Program's 2015 report.

We asked if she happened to have any legislative history for the Lagoon Conversion Program. (We were interested in finding out if there was any discussion that described the justification of why the existing technology of the lagoon spray field should be replaced or why new technologies were needed. We have been unable to find any online or through inter-library loan). **Personal Privacy / Ex. 6** She was not aware of much legislative history, but would check her records.

Personal Privacy / Ex. 6 Recently Mike Williams had made public statements that since the time of the Smithfield Report, some or all of the of the innovative technologies studied for the report had become economically feasible.

Interview regarding Fields of Filth Mapping Tool

12/14/16; 10AM

Christian Breen, Field Specialist, Waterkeeper Alliance

Will Hendrick, Waterkeeper, Pure Farms, Pure Waters North Carolina Campaign Manager

Tina Sigurdson, Assistant General Counsel, Environmental Working Group (EWG)

Soren Rundquist, Director of Spatial Analysis, EWG

Marianne Engelman Lado, Earthjustice

Mary O'Lone, EPA OGC

Daniel Isales, EPA Region III

EWG and Waterkeepers created a series of interactive maps called Fields of Filth available on the internet ([
HYPERLINK "<http://www.ewg.org/research/exposing-fields-filth>"]) "to enable citizens, lawmakers and
policymakers to visualize and interpret the state's swine, poultry and cattle operations by zooming in on
selected areas." The maps display a variety of federal demographic data and state geographical data, and
analyze high-resolution aerial photography. "The aerial images allowed researchers to quantify the length and
breadth of pig waste pits, and to determine the locations and numbers of barns at poultry operations. The
researchers drew on government and academic data to supplement these analyses."

The email attached below was sent in advance with questions and topics for discussion.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

At the beginning of the interview, we were all connected to a common screen in the Fields of Filth mapping tool
so that we could walk through the maps and data at the same time.

Soren Rundquist explained the delineation of block group-statistics in pop-ups are based on the American
Community Survey from 2015. When looking at the map, it may display more land area than is in the Census
block group, but the CAFO operations outside of boundary for that Census block group are not counted in the
data listed in pop out display of facts and figures. In order to put together the study, they procured geo-
referenced points from NC DEQ called lagoons and used that to digitize lagoons.

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Christian Breen explained that the project highlights information not publicly available from the state. –
specifically the locations of poultry CAFOs. He stated that they did the state's work by determining and
displaying the size and locations of poultry CAFOs. EWG digitized the locations of poultry CAFOs. Until recently,
poultry CAFO locations were not known to NC DEQ. He said NC DEQ requested EWG's data set. He said many
facilities exist in proximity to low income communities and minority populations.

Soren Rundquist explained that they collected geocoded locations and overflight information. With respect to
the display of information of flooding impacts from Hurricane Matthew, they documented flooding in real time

with aerial photography. A green airplane icon in one of the maps indicated a confirmed location of a flooded or inundated CAFO.

Christian Breen stated that their photos are geostamped. He said that even though they cannot manipulate the metadata of their photographs and video, historically, NC DEQ has not accepted these as evidence because it doesn't have the political will to use them. However, other departments within NC DEQ have requested poultry information (will forward email from state).

Soren Rundquist stated that the information on the amount of agricultural land within one mile of a CAFO is from the USDA's cropland data layer. He said displaying this information is important because it shows the lopsided amount of waste applied to available cropland. Swine waste is generally applied to land in close proximity to the waste lagoons. He stated that the amount of cropland may be an underrepresentation because not all of that land is actually used for swine waste application. It could be used for agricultural uses in which the swine waste is not used. He stated that this is a concern because the more saturated the land, the more likely it is for pollutants to enter the water.

Christian Breen thought that NC DEQ should know what is adjacent to the swine CAFOs (such as the poultry facilities) and take that into account, but it doesn't. With concentration of swine and poultry facilities the state is exceeding the carrying capacity of the land and waterways.

They pointed out Stocking Head Creek which Waterkeepers has been working to get listed by NC DEQ as impaired under the Clean Water Act. It has high pollutant levels. There is one household along the creek with a septic system and many swine CAFOs.

Soren Rundquist has not visited a field in North Carolina which is not ditched and drained because otherwise it would be under water. He stated they estimated of 14,000 birds per barn which he believes is a very conservative estimate and that frequently there are up to 25,000 birds per barn. They will update the Fields of Filth maps annually as data sets are updated.

O'Lone, Mary

From: O'Lone, Mary
Sent: Tuesday, December 13, 2016 9:26 PM
To: Marianne Engelman Lado
Cc: Isales, Daniel; 'Christian Breen'; 'Will Hendrick (whendrick@waterkeeper.org)'
Subject: RE: Follow Up Conversation with Christian Breen

Marianne-

In case we can't do the shared screen (which is looking doubtful), I am sending along some of the questions that I had when looking at the maps & methodology for "Fields of Filth." I want to make sure I understand what I am seeing & as I mentioned I don't think it will take long. If Christian has time, I wanted to give him a chance to look in advance at what I am talking about.

On the Methodology page under Block Map Attributes it says:

- **Total Population:** The total population within the block boundary. Data estimates from the 2010 U.S. Census and various U.S. Census surveys.
- **Percent African American:** The percent of African Americans within the total population of the block boundary. Data estimates from the 2010 U.S. Census and various U.S. Census surveys. . . .

Where are these Block Maps that contain the Block level population data?

Then later in the Methodology under Summary Maps it says: Block Group Map - Animal feeding operation points were aggregated and summarized using 2010 U.S. Census data from the latest American Housing Survey (AHS).

I am assuming that the map entitled “Concentrated Animal Feeding Operations by Census Block Group” is the Block Group Summary Map mentioned above. So on that map, are the different color coded land areas I am looking at Block Groups?

When I click on the southern most dark maroon area in Duplin County (looks roughly like the profile of an airplane) I pull up some population figures (i.e., 2010 U.S. Census -Total Population: 1,224, Pct. African American: 16%, Pct. Native American: 0%, Pct. Hispanic (any race): 7%). Are those population #s that I see for that dark maroon area (i.e., a specific Block Group)?

When I click on See Block Data – what Block data am I seeing? I don’t see any population data. So where would I see Block level data that is discussed in the Methodology section? Also, I can’t see the boundary of the Block/Block Group on this map or is it there & I am missing it? Is there any way to tell what proportion of the land area of the Block/Block Group I am seeing once I click on See Block Data.

Just curious, but west of the Lumberton airport & northwest of a traffic cloverleaf is a water body labelled as a lagoon in the middle of a flood plain (Waste Lagoon, Lagoon Area: 265,401 sq. ft., Status: within 1,500 ft. of verified lagoon, Within Flood Plain: Yes, Along Impaired Waterway: No, Data Source: EWG). I don’t see any swine confinement houses nearby, it isn’t the tell tale reddish color, & there don’t appear to be outfall pipes going into it. How can you tell it is a waste lagoon?

How frequently are the maps updated and/or what triggers an update? When was the last update?

Thanks, Mary

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Personal Matters / Ex. 6, 7(c)



Personal Matters / Ex. 6, 7(c)